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| 09/965,698 | 09/26/2001 | Brian A. Leete | 42390P12164 | 8188 |

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| EXAMINER |
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KNOLL, CLIFFORD H

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| ART UNIT | PAPER NUMBER |
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2112

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,698

Applicant(s)

LEETE ET AL.

Examiner

Clifford H. Knoll

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-2, 4-8, 10-13, 15-19, 21-26, 28-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-8, 10-13, 15-19, 21-26, 28-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to communication filed 3/1/05. Claims 1-2, 4-8, 10-13, 15-19, 21-26, and 28-30 are pending. Claims 3, 9, 14, 20, and 27 have been cancelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. *Claims 1 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

The "is one is" recitation is unclear because it is grammatically confusing. Also, "the other" apparently lacks antecedent basis, although such basis might be established by a clear recitation preceding.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. *Claims 1-2, 4-8, 10-13, 15-19, and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker (US 5291614).*

Regarding claim 1, Baker discloses generating and initializing primary and secondary interrupt queue heads with endpoints that require more than one frame (e.g., Figure 8, "TCB1", "TCB 2"; col. 12, lines 39-42), and scheduling the queue heads in successive frames (e.g., col. 10, lines 41-45).

Regarding claim 2, Baker also discloses generating of queue heads is done when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame (e.g., col. 12, lines 44-47).

Regarding claim 4, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47); and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 12, lines 47-50).

Regarding claim 5, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47) and one complete split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 12, lines 47-50).

Regarding claim 6, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47) and two complete splits (e.g., col. 12, lines 47-50); and initializing the secondary interrupt queue head to do one complete split (e.g., col. 12, lines 47-50).

Regarding claim 7, Baker also discloses reinitializing the queue heads (e.g., col. 10, lines 44-45).

Regarding claim 8, Baker also discloses a full-speed or low speed device (e.g., col. 2, lines 35-48).

Regarding claim 10, Baker also discloses polling to determine the status of the queue head (e.g., col. 12, lines 42-44).

Regarding claim 11, Baker also discloses polling to determine the status of the queue head (e.g., col. 12, lines 42-44).

Regarding claim 12, Baker discloses the medium that provides instructions for generating and initializing primary and secondary interrupt queue heads with endpoints that require more than one frame (e.g., Figure 8, "TCB1", "TCB 2"; col. 12, lines 39-42), and scheduling the queue heads in successive frames (e.g., col. 10, lines 41-45).

Regarding claim 13, Baker also discloses generating of queue heads is done when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame (e.g., col. 12, lines 44-47).

Regarding claim 15, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47); and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 12, lines 47-50).

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Regarding claim 16, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47) and one complete split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 12, lines 47-50).

Regarding claim 17, Baker also discloses initializing the primary interrupt queue head to do one start split (e.g., col. 12, lines 44-47) and two complete splits (e.g., col. 12, lines 47-50); and initializing the secondary interrupt queue head to do one complete split (e.g., col. 12, lines 47-50).

Regarding claim 18, Baker also discloses reinitializing the queue heads (e.g., col. 10, lines 44-45).

Regarding claim 19, Baker also discloses a full-speed or low speed device (e.g., col. 2, lines 35-48).

Regarding claim 21, Baker also discloses polling to determine the status of the queue head (e.g., col. 12, lines 42-44).

Regarding claim 22, Baker also discloses polling to determine the status of the queue head (e.g., col. 12, lines 42-44).

3. *Claims 1-2, 4-8, 10-13, 15-19, 21-26, and 28-30 are rejected under 35*

U.S.C. 102(e) as being anticipated by Wooten (US 6272499).

Regarding claim 1, Wooten discloses generating and initializing primary and secondary interrupt queue heads with endpoints that require more than one frame (e.g.,

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col. 6, lines 38-41), and scheduling the queue heads in successive frames (e.g., col. 13, lines 4-9).

Regarding claim 2, Wooten also discloses generating of queue heads is done when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame (e.g., col. 13, lines 14-15).

Regarding claim 4, Wooten also discloses initializing the primary interrupt queue head to do one start split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 13, lines 16-19).

Regarding claim 5, Wooten also discloses initializing the primary interrupt queue head to do one start split and one complete split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 13, lines 16-19).

Regarding claim 6, Wooten also discloses initializing the primary interrupt queue head to do one start split and two complete splits; and initializing the secondary interrupt queue head to do one complete split (e.g., col. 13, lines 16-19).

Regarding claim 7, Wooten also discloses reinitializing the queue heads (e.g., col. 12, lines 38-45).

Regarding claim 8, Wooten also discloses a full-speed or low speed device (e.g., col. 3, lines 38-40).

Regarding claim 10, Wooten also discloses polling to determine the status of the queue head (e.g., col. 13, lines 11-14).

Regarding claim 11, Wooten also discloses polling to determine the status of the queue head (e.g., col. 13, lines 11-14).

Regarding claim 12, Wooten discloses the medium that provides instructions for generating and initializing primary and secondary interrupt queue heads with endpoints that require more than one frame (e.g., col. 6, lines 38-41), and scheduling the queue heads in successive frames (e.g., col. 13, lines 4-9).

Regarding claim 13, Wooten also discloses generating of queue heads is done when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame (e.g., col. 13, lines 11-15).

Regarding claim 15, Wooten also discloses initializing the primary interrupt queue head to do one start split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 13, lines 16-19, Figure 5).

Regarding claim 16, Wooten also discloses initializing the primary interrupt queue head to do one start split and one complete split; and initializing the secondary interrupt queue head to do two complete splits (e.g., col. 13, lines 16-19, Figure 5).

Regarding claim 17, Wooten also discloses initializing the primary interrupt queue head to do one start split and two complete splits; and initializing the secondary interrupt queue head to do one complete split (e.g., col. 13, lines 16-19, Figure 5).

Regarding claim 18, Wooten also discloses reinitializing the queue heads (e.g., col. 14, lines 20-25).

Regarding claim 19, Wooten also discloses a full-speed or low speed device (e.g., col. 3, lines 38-40).

Regarding claim 21, Wooten also discloses polling to determine the status of the queue head (e.g., col. 13, lines 11-14).

Regarding claim 22, Wooten also discloses polling to determine the status of the queue head (e.g., col. 13, lines 11-14).

Regarding claim 23, Wooten discloses high speed serial bus, a full-/low-speed and a coupled hub (e.g., col. 3, lines 38-40) to translate bits of data associated with an endpoint between a transfer rate associated with the high-speed serial bus and a transfer rate associated with the full-/low-speed serial bus; a host, comprising: a host controller driver unit to generate, initialize, and schedule a primary interrupt queue head and a secondary interrupt queue head, the primary and secondary interrupt queue heads to represent the endpoint, the endpoint representing a transaction with at the least one remote device (e.g., col. 13, lines 16-20), wherein execution of the endpoint requires more than one frame, the frame comprising a plurality of micro-frames (e.g., col. 13, lines 14-15); a host controller unit, coupled with the high-speed serial bus and the host controller driver unit, to transmit the bits of data associated with the endpoint to and receive the bits of data associated with the endpoint from at least one remote device; and the at least one remote device, coupled with the full-/low-speed serial bus, to transmit bits of data associated with the endpoint to and receive bits of data associated with the endpoint from the host controller unit (e.g., col. 6, lines 54-59).

Regarding claim 24, Wooten also discloses the host controller driver unit is to schedule the primary and secondary interrupt queue heads such that the primary queue head is positioned in a first frame and such that the secondary interrupt queue head is positioned in a second frame, the second frame being immediately subsequent to the first frame (e.g., col. 13, lines 16-20).

Regarding claim 25, Wooten also discloses the host controller driver unit is to generate the primary and secondary interrupt queue heads when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame in the plurality of micro-frames (e.g., col. 13, lines 14-15).

Regarding claim 26, Wooten also discloses an enhanced host controller interface unit, which includes the host controller unit, the enhanced host controller interface unit to provide an interface between the host controller unit and the host controller driver unit (e.g., col. 3, lines 30-36).

Regarding claim 28, Wooten discloses a high-speed signaling environment; a full-/low speed signaling environment; a hub, wherein the hub is located within the high-speed signaling environment and the full-/low speed signaling environment, to translate bits of data associated with an endpoint between a transfer rate associated with the high-speed signaling environment and a transfer rate associated with the full-/low-speed signaling environment; a host, located within the high-speed signaling environment, coupled with the hub, to transmit bits of data associated with an endpoint to and receive bits of data associated with the endpoint from at least one remote device (e.g., col. 3, lines 38-40), and to generate, initialize, and schedule a primary interrupt queue head and a secondary interrupt queue head, the primary and secondary interrupt queue heads to represent the endpoint, the endpoint representing a transaction with at the least one remote device (e.g., col. 13, lines 16-20), wherein execution of the endpoint requires more than one frame, the frame comprising a plurality of micro-frames (e.g., col. 13, lines 14-15); and the at least one remote device, coupled with the hub, to

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transmit bits of data to and receive bits of data from the host, wherein the at least one remote device is located within the full-/low-speed signaling environment (e.g., col. 6, lines 54-59).

Regarding claim 29, Wooten also discloses wherein the host is to schedule the primary and secondary interrupt queue heads such that the primary queue head is positioned in a first frame and such that the secondary interrupt queue head is positioned in a second frame, the second frame being immediately subsequent to the first frame (e.g., col. 13, lines 16-20).

Regarding claim 30, Wooten also discloses wherein the host is to generate the primary and secondary interrupt queue heads when the execution of the endpoint is to begin in one of a third, fourth, or fifth micro-frame in the plurality of micro-frames (e.g., col. 13, lines 14-15).

4. *Claims 1-2, 4-8, 10-13, 15-19, 21-26, and 28-30 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Leete (US 2003/005182).*

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claims 1-30, Applicant is directed to Figures 5 and 8.

Response to Arguments

Applicant's arguments filed 3/1/05 have been fully considered but they are not persuasive.

Applicant argues that Baker does not disclose "generating primary and secondary interrupt queue heads to represent a single endpoint between high and full/low-speed devices". To distinguish, Applicant notes that Baker "discloses generating and initializing multiple queue heads that represent multiple tasks" (p. 12); however this feature in Baker does not preclude its application to the claimed invention. As argued previously by the Examiner:

"Baker's "TCBs" (task control blocks) correspond to the "at least one remote device", which are represented by a single endpoint, namely Baker's "dummy TCB" which "serves as the anchor point of all the real-time tasks which are linked" (col. 10, lines 41-42)" (Office Action 10/25/04)

Regarding the endpoint as "between high and full/low-speed devices", the claims specifically recite (though unclearly, please note §112(2) rejection above) the host and remote device is/are "high speed device[s]" or at least one of "full-speed and a low-speed device". Examiner has determined that the endpoints pertain to interrupts and that the particular tasks may concern "functions ... that can be off-loaded to improve performance of the PC or host system" (col. 13, lines 19-23). In this particular case,

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Baker's "host system" is the remote device, while the "high-speed" DSP processor is interpreted as the claimed host.

Thus the rejection over Baker is maintained.

Applicant argues that Wooten does not disclose "generating primary and secondary interrupt queue heads to represent a single endpoint between high and full/low-speed devices". To distinguish, Applicant notes that Wooten discloses "sending a serial bus packet for each serial bus transaction" (p. 14); however, it is not clear how this distinguishes Wooten as not anticipatory of the features claimed in the instant invention. In particular it is seen that Wooten establishes the same frames as the claimed invention for the purpose of performing the transaction; for example, "isochronous transfers, which are characterized as periodic, continuous communication between host and device typically used for time-sensitive data/control, such as telephony information or audio information" (col. 6, lines 6-10). The Examiner interprets the transaction across multiple frames as the transaction and finds this to anticipate the transactions of the claimed invention.

Thus the rejection over Wooten is maintained.

Applicant argues that Leete does not disclose "generating primary and secondary interrupt queue heads to represent a single endpoint between high and full/low-speed devices". To distinguish, Applicant states that Leete discloses "determining whether a queue head has less than or equal to a predetermined packet size and whether a period is one of greater than and equal to a predetermined window" (p. 15); however, this particular feature of Leete's disclosure is not pertinent to determining its anticipatory

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nature. Leete clearly discloses primary and secondary queue heads as indicated in the cited Figure 5 ("Interrupt Queue Heads 530"). Furthermore, the Examiner maintains that the recitation of queue heads "to represent an endpoint" is adequately disclosed by Leete (e.g., "[t]he interrupt queue head represents and manages traffic to interrupt endpoints behind a given transaction translator" (paragraph 6)). Regarding the Applicant's assertion that the endpoint is "between high and full/low-speed devices", Leete further clearly establishes the high-speed nature of the devices (e.g., "high-speed mode" (paragraph 21)).

Thus the rejection over Leete is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifford H. Knoll whose telephone number is 571-272-3636. The examiner can normally be reached on M-F 0630-1500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H. Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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